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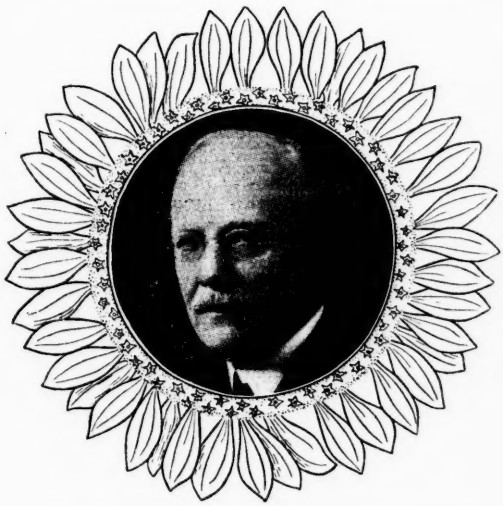

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THE STRATIOMYIDAE OF COLORADO AND UTAH

MAURICE T. JAMES, Colorado State College.

(Concluded from Vol. 9, No. 1)

13. Fourth abdominal segment wholly black or the sides only very narrowly yellow on the basal two-thirds ..... **discalis** Loew
Fourth abdominal segment laterally and usually the sides of the fifth yellow ..... **quaternaria** Loew

14. Antennae long, the first segment at least four or five times the length of the second 17
Antennae short, the first segment hardly three times the length of the second 15

15. Mesonotum mostly black-haired .. **melanostoma** Loew
Mesonotum pale-haired 16

16. Segments of abdomen wholly pale ventrally .... **currani** James
Segments of abdomen ventrally with black basal bands ..... **laticeps** Loew

17. Antennae and usually the femora brown .... **u. jonesi** James
Antennae and femora black 18

18. Posterior border of the fourth abdominal segment wholly yellow 19
Fourth abdominal segment without an entire posterior border ..... **apicula** Loew

19. Third abdominal segment with an entire yellow posterior border ..... **angulicincta** James
The posterior border of the third abdominal segment, if present, interrupted medially 20

20. Lateral markings of the second and third segments contiguous ..... **wyomingensis** James
Lateral markings of the second and third segments not contiguous ..... **unilimbata** Loew

Stratiomys maculosa Loew

UTAH. Raft River Mts., June, 1928 (D. E. Beck); Rock Canon, Provo, June (C. Lynn Hayward); Dividend, June 1 (Tom Spaulding); Providence, June 25, 1931 (Hammond). Also recorded from Ogden by Knowlton. Probably occurs in western Colorado.

Stratiomys occidentalis Banks

Type from Ogden, Utah.

Stratiomys barbata Loew

Common in the mountains of Colorado, particularly near the eastern foothills. Rocky Mountain National Park, several localities (Helen Rodeck); Gold Hill; Long's Peak Inn (W. P. Cockerell); Twin Sisters (T. D. A. Cockerell); Boulder; Cumbres Pass (Kenneth Maehler); Cameron Pass.

Stratiomys hirsutissima James

Type from Alamosa, Colo.

Stratiomys discalis Loew

UTAH. Logan, May 27 to June 23 (Titus); Salt Lake City July 2, 1908 (Titus); Providence, June 7 (Knowlton and Janes); Provo, June 6, 1933 (Knowlton); Garland, June 24, 1931 (Knowlton). COLO. Spanish Peaks, recorded by Johnson (1895).

Stratiomys discalis media James

Type from Colorado.

Stratiomys quaternaria Loew

COLO. Common along the eastern foothills in June. Boulder; Fort Collins.

Stratiomys currani James

COLO. Type series. Paonia. UTAH. Huntsville, Ogden County, July 12, 1922 (E. P. VanDuzee), Cole Collection. Wellsville Canon, June, 1926 (C. J. D. Brown); Jordon River (Beck).

Stratiomys laticeps Loew

COLO. Monte Vista, July 4, 1933 (Kenneth Maehler). UTAH: Logan (Titus), Manti and Providence (Knowlton), June and July.

Stratiomys apicula Loew

COLO. Boulder, June.

Stratiomys angulicincta James

COLO. Type, from Alamosa. Boulder, several specimens, June (H. G. Rodeck, James). UTAH. Zion National Park (Doyle Little).

Stratiomys unilimbata Loew

COLO. Common. Berkeley; Fort Collins; Boulder; Manitou; Sterling; Trinidad; Estes Park; Rio Grande County. UTAH. Logan; Providence; Riverdale; Utah Lake. June to August.

Stratiomys unilimbata jonesi James

COLO. Type from Brighton.

MYXOSARGUS Brauer

Two species have been recorded from Utah: **M. knowltoni** Curran (Types) and **M. nigricornis** Greene.

ODONTOMYIA Meigen*

Key to species

Eyes contiguous (males) 1
Eyes widely separated (females) 17

Males

1. Radio-medial cross-vein absent 2
   Radio-medial cross-vein present 5
2. Face prominent below the antennae; length, 10 mm. or less 16
   Face receding below the antennae; length, 12 mm. or more, usually 14 to 16 mm. 3
3. Disc of mesonotum usually with two pale spots; femora yellow, though the apices may be rusty or brownish; the black of the abdomen does not reach the margin, but may be represented by small black marginal spots ..... **truquii** Bell.
   Disc of mesonotum wholly black; anterior femora at least in part blackish; the black of the abdomen attains the lateral margins at the bases of the segments ..... **varipes** Loew
4. Femora black, the apices often pale 15
   Femora wholly yellow, at most reddish or brownish 5
5. Face above the depression wholly yellow, the frontal triangle sometimes black 6
   Face above the depression and the frontal triangle black 9
6. Lateral margins of the mesonotum wholly yellow or green ..... **cincta** Oliv.
   Lateral margins of the mesonotum black, the posterior calli sometimes pale 7
7. Inner occular orbits strongly bowed; the width of the face across the oral margin greater than the distance from the upper angle of the oral margin to the base of the antennae ..... ****tumida** Banks
   Inner occular orbits almost straight; the width of

*In a forthcoming paper, I am monographing the nearctic species of this genus.

**These three species are difficult to key; but they have a facies which is quite distinct, and can usually be quite easily recognized from correctly determined material.

the face across the oral margin about equal to the distance from the upper angle of the oral margin to the base of the antennae 8

8. Abdominal band as wide on the second and third segments as on the fourth; in some cases, the pattern on the second and third segments is broken, so that the width must include the spots separated from the main band ..... ****arcuata** Loew
Abdominal band definitely narrower on the second and third segments than on the fourth, and without lateral spots ..... ****alticola** James

9. Oral margin yellow 10
Oral margin black 12

10. Face with a keeled prominence below the antennae ..... **inaequalis** Loew
Face retreating below the antennae 11

11. Scutellum almost wholly black ..... **flava** Day
Apex of scutellum broadly yellow .. **idahoensis** James

12. The anterior basitarsi fringed below with pile which is distinctly longer than the width of the segment; face tuberculate ..... **pilimana** Loew
The anterior basitarsi with only ordinary pile; face not tuberculate 13

13. Abdomen black, with interrupted yellow posterior bands on segments two to four ..... **pubescens** Day
Abdomen green or yellow, with a black dorsal band 14

14. Third segment of antenna black; its style short and blunt ..... **virgo** Wied
Third segment of antenna yellow; its style pointed and hooked ..... **hydroleonoides** Johns

15. The pale markings of the second abdominal segment reaching toward and attaining, or nearly attaining, the base; scutellum unspined .... **nigrirostris** Loew
The pale markings of the second segment not encroachng upon the basal half of the segment .... **hoodiana** Bigot

16. Oral margin and face pale ..... **trivittata** Say
Oral margin black; face brown ..... **vertebrata** Say

17. Mesonotum with lateral yellow margins extending at least for a short distance in front of the suture 18
Mesonotum wholly black in front of the suture, their humeri sometimes yellow 22

18. Radio-medial cross-vein wanting 19
Radio-medial cross-vein present ..... **cincta** Oliv.

19. Face tuberculate or prominent above the oral margin, and marked with a small black spot on either side; legs yellow, rarely marked with black; cell 1st M2 oblique 21
Face receding to the oral margin, and wholly pale; legs usually more or less marked with black; cell 1st M2 erect 20

20. At most the very narrow base of the scutellum black; the antennae in large part clearly reddish; the inner arms of the first pair of abdominal spots usually enlarged; labellae but little tapering beyond the middle ..... **truquii** Bell.
The black base of the scutellum always convexly produced in the middle; the spots seldom emit an arm toward the middle of the second segment, and, if so, it is short and acute; labellae strongly tapering to somewhat of a point from the middle ..... **varipes** Loew

21. Disc of mesonotum with two pale vittae, in addition to the lateral vittae ..... **trivittata** Say
Only the lateral margins pale ..... **vertebrata** Say

22. Posterior femora wholly pale, at most partly rusty reddish 24
Posterior femora wholly, or at least half, black 23

23. The pale markings of the second abdominal segment attaining the base of the segment; scutellum unspined ..... **nigrirostris** Loew
The pale markings of the second abdominal segment linear and apical; scutellum distinctly spined ..... **hoodiana** Bigot

24. Sides of mesonotum yellow behind the suture, at least as far forward as the wing bases 25
Sides of mesonotum usually wholly black behind the suture; at most, the posterior calli yellow 28

25. Face with a median black or brown vitta that widens just above the oral margin .... **inaequalis** Loew
Face wholly green or yellow, or marked with black otherwise than above 26

26. The black markings of the third abdominal segment semi-elliptical, broadest at the middle of the segment ..... **alticola** James
The black markings of the third segment with a

biarcuate posterior margin, as broad or nearly as broad laterally as medially 27

27. Face in lateral profile extending as far forward as the width of the eye; abdominal bands never contiguous ..... **tumida** Banks

Face in lateral profile extending forward much less than the width of the eye; abdominal bands often contiguous ..... **arcuata** Loew

28. Front and vertex wholly red except for the ocellar triangle and the region around the base of the antennae ..... **hydroleonoides** Johns.

Front and vertex black, at most yellow along the mid-frontal suture and to each side of the ocellar triangle 29

29. Abdomen black in ground color, with pale transverse linear markings at the posterior angles of the segments ..... **pubescens** Day

Abdomen pale in ground color, with a black dorsal stripe which may, however, be broad 30

30. Pile of anterior basitarsi as long as the width of the segment, or nearly so; the style twice as long as wide, and acute; front usually with a pair of yellow spots below the antennae ..... **pilimana** Loew

Pile of anterior basitarsi of normal length; style not over one and one-half times as long as wide, and obtuse; front almost wholly black **virgo** Wied.

Odontomyia vertebrata Say

COLO. Ft. Collins, Aug. 15, 1934 (K. Maehler).

Odontomyia trivittata Say

COLO. Recorded by Johnson. This is out of the normal range of the species.

Odontomyia truquii Bell.

COLO. Common. Fort Collins, Lamar, Big Thompson Canon, Ft. Lupton, Boulder, White Rocks, Pingree Park, Roggen, Rocky Ford, Manzanola, Springfield, Loveland, Grand Junction.

UTAH. Bountiful; Ogden, Logan, Lewiston, St. George, Springvale, Garland, Geneva. Late June to August.

Odontomyia truquii innotata Curran is recorded from Farr West, Utah (Tanner) and Plain City, Utah, June 28, 1930 (Knowlton); also Ridgway, Boulder, Canon City, and Delta, Colo. **O. t. currani** James was described from Arizona, and subsequently recorded from Texas; it may occur in Utah.

Odontomyia cincta Oliv.

UTAH. Weber River, Riverdale, June, 1926 (C. Lynn Hayward); same data, (C. J. D. Brown).

Odontomyia tumida Banks

COLO. Alamosa; Fort Collins; Roggen; Boulder; late August and September. Common locally.

UTAH. Parowan (Tanner); Bountiful; Ogden; Elberta; Brigham; Promontory; Amalga; Blue Creek; Cache Junction; Ephraim; Chester; Mt. Pleasant; Timpie; Housel. Common, late August and September.

Odontomyia arcuata Loew

UTAH. Corrine, July, 1929 (Knowlton and Bowen).

Records of this species from Colorado are probably misdeterminations, though it probably occurs in western Colorado.

Odontomyia alticola James

COLO. Ft. Collins, Canon City, Cliffton, Delta, and Boulder (type series). Sterling reservoir; Princeton Hot Springs (Cockerell); White Rocks, Valmont. Late June and July.

UTAH. Provo, June (Wickham); Farr West (Tanner); Lyman, June 27, 1926 (Knowlton); Logan, June 11, 1906.

Odontomyia inaequalis Loew

COLO. Common. Boulder; Fort Collins; Loveland; Trinidad; Brighton; Ft. Lupton; Huerfano Co. (Painter); Wray; Owens Lake, Valmont; Roggen. August.

UTAH. Corrine (Knowlton and Bowen); Lamport (Knowlton); Grantsville; Spanish Forks; Blue Creek; Hyde Park (all collected by Knowlton). Common.

Odontomyia pilimana Loew

COLO. Sterling reservoir, July 10, 1921; Owens Lake, Boulder County, July 27, 1933 (C. H. Hicks).

Odontomyia pubescens Day

COLO. Common. Fort Collins; Boulder; Cameron Pass; Yampa; Loveland; Monte Vista (Kenneth Maehler); Sheep Lake, Rocky Mountain National Park (Helen Rodeck); Roggen (H. G. Rodeck); Salida (T. D. A. Cockerell); Princeton Hot Springs (W. P. Cockerell); Pagosa Springs; Walden. May in the foothills and plains; June in the mountains.

UTAH. Logan (Wylie Thomas); Logan (H. J. Pack, Knowlton); Brigham (Knowlton); Hooper (Knowlton). May and June.

Odontomyia virgo Wied.

COLO. Common. Boulder and Fort Collins, June and July.

UTAH. Farr West (Tanner); Logan, July 4, 1907 (Titus).

Odontomyia hydroleonoides Johnson

COLO. Boulder, June 3 to July 1.

UTAH. Recorded from Ogden by Johnson.

Odontomyia nigrirostris Loew

COLO. Common. Fort Collins; Boulder; Roggen; Valmont; Crowley; Monte Vista (J. H. Todd); Fort Lupton. August and Sept.

UTAH. Bear Lake Valley; Greenland Canon (Titus); Mantua (Knowlton). One specimen from Fairfield (Knowlton) bears the very unusual date May 24, 1929; this is normally a fall species.

Odontomyia nuda James is a variety or subspecies. The type is from Maybell, Colo.; Knowlton and Janes have collected this subspecies at Cornish, Utah.

Odontomyia hoodiana Bigot

COLO. Boulder; Poudre Canon; Poncha Pass, June 20, 1933 (Cockerell); Princeton Hot Springs, June 16, 1933 (Cockerell); South Fork, June 17, 1919 (Frank Lutz). Our earliest species; appears at Boulder in May. a week or two before **O. pubescens** Day.

UTAH. Aspen Grove, Timpanogas (Tanner)

Odontomyia similis Johnson

COLO. Cameron Pass, July 3 and 5, 1931.

SUBFAMILY CLITELLARINAE

Key to genera

1. Scutellum unspined; face strongly produced ..... NEMOTELUS
   Scutellum spined; face not produced 2
2. Antennae shorter than head; posterior veins evanescent ..... AOCHLETUS
   Antennae longer than head; posterior veins strong 3
3. Antennal style long, distinct ..... ADOXOMYIA
   Antennal style wanting ..... EUPARYPHUS

NEMOTELUS Geoffroy

Key to species

1. Abdomen largely white in the males, and distinctly marked with white in the females 2
   Abdomen wholly black in both sexes 3
2. Proboscis elongate, its lower portion slender and arcuate ..... **kansensis** Adams

Proboscis normal, its lower portion thicker and more fleshy ..... **notatus** Ztt.

3. Front of female with two white spots; frontal triangle of male white ..... **canadensis** Loew
Front wholly black 4

4. Rostrum of female as long or longer than the diameter of the eye, and correspondingly long in the male 5
Rostrum much shorter than the diameter of the eye; shining black species ..... **nigrinus** Fallen

5. Metallic greenish-black; rostrum, especially of male, hooked downward at apex ..... **crassus** Lw.
Metallic black; rostrum straight ..... **beameri** James

Nemotelus kansensis Adams

COLO. Boulder, July 5, 1933 (James).

Nemotelus notatus Ztt.

COLO. Mosquito Creek, Alma, July 12, 1927 (Sam McCampbell). This is the first record of this European species in the United States; but I can make out no difference between this and specimens collected in England.

Nemotelus canadensis Loew

COLO. Common. Ft. Collins, May 28, 1897 (C. P, Gillette), Aug. 10, 1899, and June 7, 1900; Roggen, July 8, 1933 (M & H. James, Louis Ireland); Holly, July 31, 1933 (Rodeck and James); Flagler, July 25, 1933 (Rodeck and James); Granada, July 31, 1933 (Rodeck and James).

UTAH. Blue Creek, June 8, 1932 (Knowlton); Logan, on sugar beets, June 31, 1907.

Nemotelus nigrinus Fallen

COLO. Florissant, July 19 (Cockerell); Gold Hill, June 24, 1932 (James); A. S. U. C, Lodge, nr. Boulder, June 15, 1933 (James); Boulder, June 15 & July 10, 1933 (James); Fort Collins, Aug. 8, 1900; Greeley, Aug. 5, 1901.

UTAH. La Verkin, June 26, 1933 (Knowlton).

This species has gone by the name of **N. unicolor** Lw.; but I can not distinguish it from the European species.

Nemotelus crassus Loew

COLO. Near Granada, July 31, 1933 (Rodeck and James). This species is more common in the east.

Nemotelus beameri James

COLO. Northgate, Aug. 20, 1931 (R. H. Beamer),

Type.

EUPARYPHUS Gerstaecker

Taxonomically, this genus is in a chaotic condition and badly in need of revision. The following key, modified from Adams, will separate the species definitely recorded from Colorado. Some of these probably extend into Utah. I have specimens from Utah representing new or unsatisfactorily determined species.

Key to species

1. Scutellum black, sometimes yellowish at the tip; spines largely yellow; vein R4 present ..... **albipilosus** Adams
   Scutellum yellow or red, at most black at the base .. 2
2. Vein R4 present 3
   Vein R4 absent 5
3. Abdomen black, the third and fourth segments with interrupted yellow cross-bands; eyes hairy ..... **major** Hine
   Abdomen not marked with cross-bands 4
4. Face largely yellow ..... **amplus** Coq.
   Face shining black, except for lateral, subtriangular pollinose spots, and, in some specimens, two narrow lines extending down from the base of the antennae ..... **mutabilis** Adams
5. First abdominal segment with a yellow spot in the middle ..... **crucigerus** Coq.
   First abdominal segment without such a spot ..... **atriventris** Coq.

Euparyphus albipilosus Adams

COLO. Colorado Springs, recorded by Adams. (Not **albipilus,** as in Aldrich's catalogue).

Euparyphus major Hine

COLO. Boulder (Cockerell); Fort Collins, Aug. 24 & 31, 1895; Masonville, Sept., 1934. Several reared specimens have the following information: "A slow-moving larva found in mud on perpendicular wall of granite just behind Horsetooth Falls. Found on 7-18-09; adult flies came forth on 7-31-09. Ft. Collins, Colo., Horsetooth Falls".

Euparyphus amplus Coq.

COLO. Chimney Gulch, Type.

Euparyphus mutabilis Adams.

COLO. Colorado Springs, recorded by Adams. Hamilton, July 8, 1928; Canon City, July 14, 1910;

Hoehne, Aug. 8, 1933; Colo., Aug. 31, 1915 (C. R. Jones),

Euparyphus crucigerus Coq.

COLO. Recorded by Coquillett.

Euparyphus atriventris Coq.

COLO. Greeley, Type; Boulder, July 6, 1933, and July 7, 1932 (James).

AOCHLETUS O. S.

Aochletus cinctus O. S.

COLO. Canon City, July 11, 1931.

SUBFAMILY GEOSARGINAE

Key to genera

1. Second antennal segment projecting into the inner side of the third, like a thumb; males dichoptic; our species yellow, non-metallic ..... PTECTICUS
   Second antennal segment connected with the third in a normal fashion; our species metallic blue or green 2
2. Ocellar triangle equilateral and situated on the vertex; cell 1st A as wide as cells M and R combined; length, 5 mm. or less ..... MICROCHRYSA
   Ocellar triangle about twice as long as wide and removed from the vertex; cells 1st A, M, and R of about equal width; larger species, ours being more than 6 mm. in length ..... GEOSARGUS

MICROCHRYSA Loew

We have two species, both introduced from Europe. **M. flavicornis** Meig. has yellow antennae, and the middle and hind femora are yellow; in **M. polita** Linn. the antennae are wholly and the femora largely black. Both species have been taken by the author at Boulder, Colo.

GEOSARGUS Bezzi

Key to species

1. Pleura black; legs not metallic green 2
   Pleura, as well as most of the body, including the femora, metallic green ..... **viridis** Say
2. Femora black; wings clouded at the middle ..... **cuprarius** Linn.
   Femora yellow; wings uniformly hyaline ..... **decorus** Say

Geosargus viridis Say

COLO. Common in the foothills, May and June. Boulder, Fort Collins. Recorded from Denver by Melander.

UTAH. May and June. Duchesne (F. K. Stoffers); Logan and Blue Creek (Knowlton and Janes).

Geosargus decorus Say

COLO. U. of C. Campus (T. D. A. Cockerell).

Geosargus cuprarius Linn.

COLO. Boulder, June 1, 1927 (E. C. Nelson).

SUBFAMILY PACHYGASTERINAE
PACHYGASTER Meig.

Pachygaster maculicornis Hine

COLO. U. of C. Campus (Cockerell).

These small flies are probably more abundant in individuals and species than this lone record would indicate. They are easily overlooked, being rarely found in most collections. **Zabrachia** has been recorded from New Mexico; **Eupachygaster** may occur here.

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AN ANNOTATED LIST OF THE TYPE CICADELLID MATERIAL IN THE COLLECTIONS OF THE COLORADO STATE COLLEGE, FT. COLLINS, COLORADO

Ralph B. Swain
Colorado State College, Ft. Collins, Colo.

An examination of the Colorado State College collection of Cicadellidae in September, 1934, disclosed the fact that quite a number of types and cotypes of species described from the Rocky Mountain area during the latter part of the last century were in danger of being lost. Many specimens were already without identifying labels. During the past twelve months, with the generous help of several specialists, I have attempted to determine the actual status of specimens marked "Type". This has necessitated the redetermination of the species of the insects, and a careful checking of pin data with our accession catalogues and the original descriptions. In the following list, the generic arrangement follows Van Duzee's catalogue as closely as possible. The order of the species, for the most part, is according to the latest revision of the genus. The latest name thought to be generally accepted is in the first line, followed below by the name under which originally described, if different. The sexes of the specimens and collection localities are given for each species. The present status of the insect as type or cotype, etc., follows the first line name. The original status if different follows the second line name.

The writer is very grateful to Dr. R. H. Beamer, Dr. P. W. Oman, Dr. E. D. Ball , and Dr. C. P. Gillette for many determinations and helpful suggestions, and to Mr. M. T. James of this department for constructive criticism of the work.

Aceratagallia humilis Oman Paratypes
1 male, 1 female, Medora, Garcett, Kansas

Aceratagallia cinerea O. & B. Cotypes
Agallia cinerea O. & B. Cotypes
3 males, 4 females, Ft. Collins, Hotchkiss, Colo.
(See **Aceratagallia arida** Oman)

Aceratagallia accola Oman Paratypes
2 males, 2 females, Washington, D. C.

Aceratagallia arida Oman Paratypes
1 male, 1 female, Colingston, Utah.

Aceratagallia arida Oman
Agallia cinerea O. & B. Cotype
1 male, Hotchkiss, Colo.

Aceratagallia gillettei O. & B. Cotypes
Agallia gillettei O. & B. Cotypes
1 male, 10 females, Tuscon, Arizona.

Idiocerus amoenus Van D. Cotype
1 female, Ft. Collins, Colo.

Idiocerus duzeei Prov.
Idiocerus perplexus G. & B. Cotypes and Metatype
Cotypes—2 females, Colorado Springs, Ft. Collins, Colo.
Metatype—1 female, Rist Canon, Colo.

Idiocerus rufus G. & B. Cotype
1 female, Rist Canon, Colo.

Idiocerus productus G. & B. Cotype
1 male, Leadville, Colo.

Macropsis bicolor Osb. Homotypes
Pediopsis bicolor Osb.
1 male, 1 female, As-bula, Ohio.

Macropsis sordida Van D. Paratypes
Pediopsis sordida Van D. Cotypes
2 females, North Park, Gore Pass, Colo.

Macropsis fumipennis var. **gleditschiae** O. B. Homotype
Pediopsis gleditschiae O. & B.
1 female, Columbus, Ohio.

Bythoscopus laetus var. **paetus** Ball Cotypes
2 females, Ft. Collins, Trinidad, Colo.

Draeculacephala manitobiana Ball Cotypes
3 males, 1 female, North Park, Happy Hollow, Steamboat Springs, Colo.

Draeculacephala gillettei Ball Cotypes and Plesiotypes
1 male, 2 females, 1 empty pin, North Colorado, LaSalle, and Ft. Collins, Colo.
Of these Cotypes 1 male and 1 female are plesiotypes, from LaSalle and North Colo.

Carneocephala fulgida Nott. Paratypes
1 male, 1 female, Sacramento County, California

Carneocephala nuda Nott. Paratype
1 female, Pima County, Arizona

Carneocephala flaviceps Riley Homotypes
1 male, 1 female, Macon, Georgia; Orange County, Texas.

Carneocephala triguttata Nott. Paratype
1 male, Coachella, California

Pagaronia 13-punctata Ball Cotypes
2 males, Marin County, California

Errhomenellus maculatus G. & B. Cotype
Acocephalus maculatus G. & B.
1 specimen broken beyond recognition. Ouray, Colo.

Memnonia consobrina Ball Cotypes
4 males, 5 females, Antonito, Ft. Collins, Colo.
North Colorado; Stratton, Nebraska.

Memnonia fraterna Ball Cotypes
4 males, 3 females, Ft. Collins, Colo. North Colorado.

Hecalus bracteatus Ball Cotypes
4 males, 4 females, 1 empty pin. Rocky Ford, Colo.

Parabolocratus viridis var. **montanus** Ball Cotypes
2 females, Headwaters of Little Beaver River, Colo. (9,500 ft. alt.)

Parabolocratus brunneus Ball Cotypes
4 males, 5 females, Ft. Collins, Wray, Colo.

Dicyphonia ramentosa Ball Cotypes
3 males, 2 females, 2 empty pins. Ft. Collins, Colo.

Aligia oculea Ball Cotypes
Eutettix oculea Ball
2 males, 4 females, 1 empty pin.
Dolores, Rifle, Ridgway, Colo.

Aligia munda Ball Cotypes
Euetettix munda Ball
4 females, Dolores, Palmer Lake, Durango, Colo.

Aligia manitou Ball Cotypes
Eutettix manitou Ball
1 male, 2 females, Dolores, Manitou, Colo.

Scaphoideus fumidus Ball Cotypes
2 males, 2 females, Rifle, Dolores, Colo.

Scaphoideus blandus Ball Cotypes
4 males, 4 females, 1 empty pin
Rifle, Ridgway, Dolores, Colo.

Deltocephalus reflexus O. & B. Cotypes
1 male, 2 females, 1 empty pin. Ames, Iowa

Deltocephalus grammicus Ball Paratypes
Deltocephalus grammicus Ball Cotypes
1 female, 1 specimen with abdomen missing.
Snyder, Colo.; Kimball, Nebr.

Deltocephalus callidus Ball Paratypes
Deltocephalus callidus Ball Cotypes
1 specimen with abdomen and hindwings missing, 1 empty pin.
Pullman, Washington.

Deltocephalus blandus Gill. Cotype
1 female, Calhan, Colo.

Deltocephalus minimus O. & B. Cotypes
2 males, 2 females, Ames, Iowa

Deltocephalus monticolus G. & B. Holotype and Metatypes
Holotype—1 female, Leadville, Colo.
Metatypes—1 male, 1 female, 1 specimen with abdomen missing, Little South River (near Barnes Camp), Marshall's Pass, Colo.

Deltocephalus ordinatus Ball Paratypes
Deltocephalus ordinatus Ball Cotypes
4 females, Marshall's Pass, Colo.

Deltocephalus striatus Linn.
Deltocephalus affinis G. & B. Metatype
1 female, Ft. Collins, Colo.

Deltocephalus unicoloratus G. & B.
Deltocephalus oculatus O. & B Cotypes
2 males, 2 females, Ames, Iowa

Deltocephalus paludosus Ball Paratypes
Deltocephalus paludosus Ball Cotypes
3 males, 4 females, Ft. Collins, Colo.

Deltocephalus satur Ball Paratypes
Deltocephalus satur Ball Cotypes
1 male, 1 female, Holly, Colo.

Deltocephalus castoreus Ball Paratypes
Deltocephalus castoreus Ball Cotype
1 female, Little Beaver River, Colo. (alt. 9,500 ft.)

Deltocephalus punctatus O. & B. Cotypes
Athysanus punctatus O. & B. Cotypes
2 females, Marshall's Pass, Colo. (10,800-12,000 ft. Alt.)

Deltocephalus vanduzei G. & B. Lectoholotype, Lectoallotype, and Metatypes
Deltocephalus vanduzei G. & B. Cotype and Metatypes
Lectoholotype—Cotype male. Leadville, Colo.
Lectoallotype—Metatype female, Livermore to Rustic, Colo.
Metatypes—1 male, abdomen missing, 1 female. Ft. Collins, Mts., s. w. of North Park on Grizzly Creek, (9,500 ft. alt.), Colo.

Deltocephalus sonorus Ball Paratypes
Deltocephalus sonorus Ball Cotypes
5 males, 3 females, Tuscon, Arizona.

Deltocephalus cookei Gill. Cotypes
3 males, 3 females, Livermore to Rustic, Colo.

Deltocephalus nigrifrons Forbes Paratype
Cicadula nigrifrons Forbes Cotype
1 female, Illinois.

Deltocephalus valens Beamer and Tuthill Paratypes
1 male, 1 female, Grand Teton Nat'l. Park, Wyoming.

Laevicephalus parvulus Gill. Cotypes
Deltocephalus parvulus Gill.
3 males, 7 females, Ft. Collins, New Windsor, Colo.

Laevicephalus sylvestris O. & B. Cotypes
Deltocephalus sylvestris O. & B.
2 males, 2 females, Ames, Iowa

Laevicephalus bimaculatus G. & B. Paratypes
Deltocephalus bimaculatus G. & B. Cotypes
2 males, 1 female with abdomen missing.
Steamboat Springs, Colo.

Laevicephalus flavovirens G. & B. Cotype
Deltocephalus flavo-virens G. & B.
1 male, Steamboat Springs, Colo.

Laevicephalus auratus G. & B. Paratypes
Deltocephalus auratus G. & B. Cotypes
2 males, Ft. Collins, Colo.

Hebecephalus vinculatus Ball Paratypes
Deltocephalus vinculatus Ball Cotypes
5 males, 5 females, Little Beaver River, Colo.

Hebecephalus tener Beamer & Tuthill Paratypes
1 male, 1 female, Pingree Park, Colo. (alt. 9,000 ft.)

Latalus misellus Ball Paratypes
Deltocephalus misellus Ball Cotypes
5 males, 4 females, Pinewood, Marshall's Pass, Ft. Collins, Happy Hollow, Steamboat Springs, Estes Park, Little Beaver River (alt. 9,500 ft.), Colo.

Polyamius compactus O. & B. Cotypes
Deltocephalus compactus O. & B.
3 males, 1 female, Ames, Iowa.

Polyamius caperatus Ball Paratype
Deltocephalus caperatus Ball Cotype
1 female, Wray, Colo.

Flexamius albidus O. & B. Cotypes
Deltocephalus albidus O. & B.
2 males, 2 females, Ames, Iowa

Flexamius flexulosus Ball Cotypes
Deltocephalus flexulosus Ball
3 males, 6 females, 2 empty pins. Holly, Ft. Collins, Trinidad, Denver, Rist Canon, Happy Hollow, Little Beaver River (9,500 ft.), Colo.

Flexamius pectinatus O. & B. Cotypes
Deltocephalus pectinatus O. & B.
2 males, 1 female, Ames, Iowa

Flexamius abbreviatus O. & B. Cotypes
Deltocephalus abbreviatus O. & B. Cotypes
2 males, 2 females, Ames, Iowa

Lonatura salsura Ball Cotypes
4 males, 5 females, 1 empty pin. Ft. Collins, Holly, Little Beaver River, Colo.

Lonatura noctivaga Ball Cotypes
4 males, 5 females, Ft. Collins, Lamar, Colo.; Stratton, Nebr.

Lonatura nebulosa Ball Cotype
1 female, Ft. Collins, Colo.

Driotura robusta O. & B. Cotypes
1 male, 2 females, Onaga, Kansas.

Unoka ornata Gill. Holotype
Athysanus ornatus Gill. Type
1 female, Ft. Collins, Colo.

Gillettiella labiata Gill. Cotypes
Deltocephalus labiata Gill.
3 males, 6 females, 2 empty pins. Belvue, Calhan, Horsetooth Gulch, Ft. Collins, Colo.

Gillettiella atropuncta Gill. Cotypes
Deltocephalus atropuncta Gill.
2 females, Belvue, Ft. Collins, Colo.

Athysanella curtipennis G. & B. Holotype
Athysanus curtipennis G. & B. Type
1 female, Colorado Springs, Colo.

Athysanus alpinus Ball Paratypes
Athysanus alpinus Ball Cotypes
1 male, 5 females, Little Beaver River, Colo. (alt. 9,500 ft.)

Athysanus frigidus Ball Paratypes
Athysanus frigidus Ball Cotypes
4 males, 4 females, Rist Canon, Pinewood, Ft. Collins, Colo.

Euscelis dentatus O. & B. Cotypes
Athysanus dentatus O. & B.
1 male, 2 females, Ft. Collins, Livermore to Rustic, Colo.

Euscelis relativus G. & B. Cotypes
1 male, 1 female, Ft. Collins, Colo.

Ophiola arctostaphyli Ball Paratypes
Athysanus arctostaphyli Ball Cotypes
4 males, 4 females, 1 empty pin.
Rist Canon, Happy Hollow, Leadville, Colo.

Ophiola vara Ball Paratype
Athysanus varus Ball Cotype
3 females, Ft. Collins, Colo.

Ophiola symphoricarpae Ball Paratype
Athysanus symphoricarpae Ball Cotype
1 female, Ridgway, Colo.

Commellus colon O. & B. Paratypes
Athysanus colon O. & B. Cotypes
2 males, 2 females, Ames, Iowa

Eutettix querci G. & B. Cotype
1 female, Manitou, Colo.

Eutettix clarivida Van D. Cotype
1 female, Montrose, Colo.

Eutettix insanus Ball. Cotypes
4 males, 4 females, Pueblo, Colo.

Eutettix strictus Ball Cotypes
4 males, 2 females, Tuscon, Ariz.

Eutettix scitulus Ball Cotypes
5 males, 2 females, Ft. Collins, Colo.

Eutettix pullatus Ball Cotypes
1 male, 1 female, Salida, Colo.

Eutettix perelegantis Ball Cotypes
3 females, Durango, Ridgway, Salida, Colo.

Eutettix mildredae Ball Cotype
1 female, Colorado Springs, Colo.

Eutettix saucius Ball Cotypes
2 males, Denver, Colo.; Tuscon, Ariz.

Eutettix albidus Ball Cotypes
Phlepsius albidus Ball
2 females, Pueblo, Colo.

Phlepsius graphicus Ball Cotypes
3 females, 1 specimen with abdomen missing.
Ft. Collins, Colo.; Kimball, Nebr.

Phlepsius cumulatus Ball Cotypes
2 males, 3 females, Virginia Dale, Ft. Collins, Pinewood, Colo.

Phlepsius cumulatus var. **arctostaphylae** Ball Cotypes
2 males, 1 female, Dutch George's, Colo.

Phlepsius josea Ball Cotypes
1 male, 1 female, Alder, North Park, Colo.

Phlepsius extremus Ball Cotypes
1 male, 1 female, Rifle, Durango, Colo.

Phlepsius vanduzei Ball Cotype
1 empty pin. Grand Junction, Colo.

Phlepsius denudatus Ball Cotypes
2 males, 3 females, Grand Junction, Colo.

Phlepsius lascivius Ball Cotypes
2 males, 4 females, Kimball, Nebr.
Pueblo, Ft. Collins, Rist Canon, Dutch George's, Colo.

Phlepsius altus O. & B. Cotypes
2 males, 2 females, Ames, Iowa

Phlepsius turpiculus Ball Cotypes
5 males, 2 females, Ft. Collins, Holly, Colo.

Thamnotettix osborni Ball Cotypes
4 males, 2 females, 1 specimen with abdomen missing.
Kimball, Nebr.; · Ft. Collins, Spring Canon, Colo.

Thamnotettix heidemanni Ball Cotypes
7 males, 1 female, Alder, Cerro Summit, Colo.

Thamnotettix cockerelli Ball Cotypes
3 males, 4 females, 1 empty pin. Ward, Marshall's Pass, Colo.

Thamnotettix graeculus Ball Cotype
1 male, Rifle, Colo.

Thamnotettix mendicus Ball Cotype
1 female, Ft. Collins, Colo.

Thamnotettix belli Uhl.
Thamnotettix sonorae G. & B. Cotype
1 female, Dolores, Colo.

Thamnotettix caricis G. & B. Cotype
1 male, Steamboat Springs, Colo.

Chlorotettix stolatus Ball Cotypes
1 male, 1 female, 1 specimen with abdomen missing.
Cimmaron, Colo.

Neocoelidia tumidifrons G. & B. Cotypes
2 males, Ft. Collins, Horsetooth Gulch, Colo.

Cicadula arcuata G. & B. Cotype
1 male, Leadville, Colo.

Balclutha punctata Thunb.
Gnathodus confusus G. & B. Cotypes
2 females, Steamboat Springs, Estes Park, Colo.

Balclutha manitou G. & G. Holotype
Gnathodus manitou G. & B. Type
1 female, Manitou, Colo. (alt. 6,629 ft.)

Alebra fumida Gill. Paratype
1 female, Ithaca, N. Y.

Dikraneura cruentata Gill. Paratypes
2 males, 4 females, Ithaca, Hamburgh, N. Y.; Howe's Gulch, Colo.

Dikraneura unipuncta Gill. Paratypes
2 females, California; Los Angeles, Cal.

Dikraneura mali Prov.
Dikraneura communis Gill. Paratypes
1 male, 2 females, Ag. Coll. Mich.; Ft. Collins, Colo; Ills. St. Lab. Nat. Hist.

Dikraneura cockerelli Gill. Paratypes
1 male, 2 females, 2 empty pins. Las Cruces, N. Mex.

Dikraneura kunzei Gill. Paratypes
2 males, 1 female, 1 empty pin. Tuscon, Ariz.

Empoasca trifasciata Gill. Paratypes
1 male, 3 females, 1 specimen with abdomen missing.
Douglass County, Kans.; Ames, Ia.; Dolores, Colo.

Empoasca maligna Walsh
Empoasca unicolor Gill. Paratypes
1 male, 14 females, 1 empty pin.
Horsetooth Gulch, Colo.; Ames, Ia.; Salineville, Ohio.

Empoasca denticula Gill. Cotype
1 female, Colorado Springs, Colo.

Empoasca atrolabes Gill. Paratypes
1 male, 13 females, 1 empty pin.
Ag. Coll. Mich.; Palmer Lake, Cimmaron, Colo.

Empoasca albolinea Gill. Paratypes
4 females, 1 empty pin. Ills.; Douglass County, Kans.

Empoasca clypeata G. & B. Paratypes
2 males, 1 empty pin.
Elk River, 10 miles above Steamboat Springs, Colo.

Empoasca livingstoni Gill. Metatype
1 male, Easton, Washington.

Empoasca nigra G. & B. Paratypes
1 male, 1 empty pin. Mts. s. w. of North Park on Grizzly Creek (9,500 ft. alt.), Colo.

Empoasca nigra var. **pulchella** G. & B. Holotype
Empoasca pulchella G. & B. Type
1 female, Mts. s. w. of North Park on Grizzly Creek (9,500 ft. alt.), Colo.

Empoasca nigra var. **typhlocyboides** G. & B. Paratypes and Metatypes
Empoasca typhlocyboides G. & B. Cotypes and Metatypes
Paratypes—2 males, Steamboat Springs, Colo.
Metatypes—3 females, Cerro Summit, Colo.

Empoasca nigra var. **typhlocyboides** G. & B.
Empoasca robusta Gill. Paratypes
1 female, 1 specimen lacking abdomen, but female from data. Both on one pin. Nevada County, Calif.

Empoasca nigra var. **nigroscuta** G. & B. Paratype and Metatypes
Empoasca nigroscuta G. & B. Cotype and Metatypes
Paratype—1 female, Dolores, Colo.
Metatypes—3 males, 4 females, 1 empty pin, Cerro Summit, Cimmaron, Colo.; Wasatch, Utah.

Empoasca radiata Gill. Paratypes
4 females, Horsetooth Gulch, Colo.

Empoasca birdii Goding
Empoasca pallida Gill. Paratype
1 female and 1 nymph on same pin, N. Carolina.

Empoasca snowi Gill. Paratypes
2 females, Magdalena Mts., N. Mex.

Empoasca aspersa G. & B. Paratypes
1 male, 4 females, 2 empty pins.
Horsetooth Gulch, Ft. Collins, Steamboat Springs, Colo.

Empoasca alboneura Gill. Paratypes
6 males, 8 females, 3 empty pins.
Virginia; Ag. Coll. Miss.; Ft. Collins, Leadville, Colo.

Empoasca alboneura Gill.
Empoasca tumida Gill. Paratype
1 female, Horsetooth Gulch, Colo.

Empoasca sanguinea Gill. Holotype
Typhlocyba sanguinea Gill.
1 female, Manitou, Colo.

Eupteryx vanduzei Gill. Paratypes
2 females, Hamburgh, N. Y.

Eupteryx flavoscuta Gill. Paratypes
1 female, 1 empty pin. Hamburgh, N. Y.

Eupteryx flavoscuta var. **nigra** Osb.
Eupteryx flavoscuta Gill. Paratype
1 female, Washington, D. C.

Typhlocyba sanguinea G. & B. Holotype (see **Empoasca**)
On the authority of Dr. P. W. Oman this species is now referred to the genus **Empoasca.**

Typhlocyba gillettei var. **gillettei** Van D. Metatypes
Typhlocyba querci var. **bifasciata** G. & B. Metatypes
2 males, 3 females, 1 empty pin.
Hamburgh, Albany, N. Y.; Cimmaron, Colo.; Ames, Ia.; Iowa.

Typhlocyba flavomarginata G. & B. Cotype and Metatypes
Cotype—1 female, Manitou, Colo.
Metatypes—2 males, 3 females, Cimmaron, Cerro Summit, Colo.

Erythroneura noevus Gill. Paratypes
Typhlocyba obliqua var. **noevus** Gill.
1 male, 1 female, Onaga, Kansas.

Erythroneura fumida Gill. Paratypes
Typhlocyba obliqua var. **fumida** Gill.
2 males, 1 female, Onaga, Kansas.

Erythroneura kanza Rob. ? (det. R. H. Beamer)
Typhlocyba obliqua var. **fumida** Gill. Paratype
1 female, Onaga, Kansas.

Erythroneura rubricata Van D. Cotype
Typhlocyba rubricata Van D.
1 female, Crescent City, Fla.

Erythroneura rubroscuta Gill. Paratypes
Typhlocyba rubroscuta Gill
1 male, 9 females, Onaga, Kansas.

Erythroneura crevecoeuri Gill. Paratypes
Typhlocyba crevecoeuri Gill.
1 male, 6 females, Onaga, Kansas.

Erythroneura lawsoniana Baker Cotypes
Typhlocyba obliqua var. **dorsalis** Gill.
1 male, 2 females, Ag. Coll. Mich.

Erythroneura casta Beamer Paratypes
1 male, 1 female, Huachuca Mountains, Arizona.

Erythroneura davisi Beamer Paratypes
2 females, Las Vegas, Nev.

Sp. ?
Typhlocyba vulnerata var. **nigra** Gill. Paratype
1 empty pin. Onaga, Kansas.

Erythroneura nigerrima McAtee
Typhlocyba vulnerata var. **nigra** Gill. Paratypes
1 male, 1 female, Iowa; Ill. St. Lab. Natl. Hist.

Erythroneura gradata Robinson
Typhlocyba comes var. **rubra** Gill. Paratypes
1 male, 4 females, Palmer Lake, (alt. 7500-8000 ft.) Clear Creek Canon, Colo.

Erythroneura kansana Baker Paratype
Typhlocyba comes var. **scutelleris** Gill.
1 female, Ill. St. Lab. Natl. Hist.

Erythroneura illinoiensis Gill. Paratypes
Typhlocyba illinoiensis Gill.
1 male, 4 females, 1 specimen lacking abdomen.
Ag. Coll. Miss.; Havana, Ills.; Ill. St. Lab. Natl. Hist.

Erythroneura hartii Gill. Cotypes
Typhlocyba hartii Gill.
2 males, Champaign, Ill.

Erythroneura gilensis Beamer Paratypes
1 male, 1 female, Gila County, Arizona.

Erythroneura compta McAtee
1 specimen from Illinois marked "Type". Original designation cannot be determined.

Erythroneura coloradensis Gill. Cotypes
Typhlocyba comes var. **coloradensis** Gill.
2 males, 3 females, 1 empty pin.
Ft. Collins, Colo.; Las Cruces, N. Mex.

Erythroneura rubra Gill. Paratypes
Typhlocyba comes var. **rubra** Gill.
2 females, 1 empty pin. Ames, Ia.; Iowa.

Erythroneura aclys McAtee
Typhlocyba comes var. **infuscata** Gill. Paratypes
2 females, Onaga, Kansas.

Erythroneura infuscata Gill.
Typhlocyba vulnerata var. **nigra** Gill. Paratypes
1 male, Ithaca, N. Y.

Erythroneura canyonensis Beamer Paratypes
2 males, Grand Canyon, Arizona.

NEW SYRPHIDAE (DIPTERA) FROM BRAZIL AND CUBA

CHAS. L. FLUKE, JR., University of Wisconsin

Through the cooperation of Dr. Edson J. Hambleton of Sao Paulo and Dr. T. Borgmeier of Rio de Janeiro, I have been able to study several collections of Brazilian Syrphidae. Several of the new forms have been sent to Dr. C. H. Curran for naming, the rest are described in this paper. It is hoped to publish soon a key to the species of Brazilian Syrphidae, particularly of the groups that appear to be well represented in the collections studied.

Baccha summa n. sp.

Fig. 1

A large dark species that is probably closest to **clarapex** Wied., but the wings are almost uniformly infuscated with brown, legs paler, thorax and abdomen with narrow pale vittae. Length about 13 mm.

Face with a large rounded tubercle, narrowly yellow on the sides, otherwise brownish black, the sides silvery pollinose; pile black above, shorter and pale along the sides and below; cheeks black, pollinose; oral margin reddish to brownish, shining. Front reddish brown to black, narrowly silvery pollinose along the eye margins, the pile black. Antennae and arista yellowish brown; vertex black, long and slender, pile black; occiput silvery pollinose, the pile white, cilia black.

Thorax dark reddish brown to black, the dorsum with three narrow orange colored pollinose stripes, the two side stripes diverging and fading out before reaching the scutellum, the median one appearing as only a narrow dash on the posterior half of the dorsum, pile short and black except the longer transverse pale hairs in front; the posterior third of the mesopleura and the dorsal edge of the sternopleura yellowish; the entire pleura lightly pollinose, the pile sparse and all pale. Scutellum yellowish brown, the pile short, black, ventral fringe present.

Legs mostly yellowish; the front femora on the basal half, the middle and hind femora except their tips, the hind tibiae except their bases and tips, black; the hind metatarsus pale yellowish, the front and middle tarsi slightly infuscated above; the pile of the legs mostly black, short and appressed on the hind tibiae and femora.

Wings uniformly brownish, paler posteriorly, darker along the fore margin. Halteres and squamae light brownish to yellowish.

Abdomen mostly shining, reddish to brownish in color, with the basal corners of the third and fourth tergites yellowish, two median yellowish dashes on the third tergite and two on the fourth which connect with the yellow on the basal corners. Second segment about three times longer than broad, almost the same width throughout, the base a little wider than the tip; third gradually widening, the tip twice as wide as the base. Venter shining, blackish. Pile of abdomen all black, short, except on the first segment where it is long with numerous white hairs. There is a purplish sheen on the first segment and on the basal margin and, more narrowly, the tip of the second segment.

Type.—Male, Rio de Janeiro, Jard. Butnico, Brazil, 8-1934, (H. Souza Lopes, collector), in the American Museum; paratype male, same data, in the collection of T. Borgmeier, Rio de Janeiro.

This species somewhat resembles **nitidula** Cur. but may be told by the markings of the abdomen and the pale hairs of the pleura.

Baccha arx n. sp.

Figs. 2, 3

Closely related to **phaeoptera** Schiner, differs as follows: second abdominal segment much shorter, not more than two and one half times as long as it is wide at the tip; third longitudinal vein more pronouncedly curved into posterior cell; wing cells hyaline, only the veins brownish clouded; coxal hairs black; etc. Length 17 mm.

Male—Face, cheeks, and front yellow, the latter with a small triangular black spot; antennal prominence with a large shining black spot pointed anteriorly to between the antennae, posteriorly broad, sides of face very thinly pollinose; tubercle moderate; pile of face and front black, of cheeks yellowish. First two segments of antennae yellow with black pile, third segment reddish; arista reddish, darker toward the tip. Vertical triangle black with black pile, cinereous pollinose posteriorly; occiput very thin above, cinereous, the pile yellow below, becoming black above.

Mesonotum dark with three silvery vittae, the two

outer ones diverging posteriorly, and none reaching the antennae; sides broadly yellow; pile short, mostly black; scutellum dull yellow with sparse, short black pile. Pleura yellow with the front halves of the mesopleura, the basal halves of the sternopleura and hypopleura, and the basal thirds of the metapleura black.

Legs yellow, hind femora and tibiae black except their bases and tips; pile of middle and hind coxae, all the femora, and the hind tibiae black, elsewhere yellow. Wings yellowish brown along the veins only the centers of the cells hyaline; stigma brownish; third vein decidedly curved.

Abdomen slightly shorter than the wings; second segment only two and one half times as long as wide at the tip; fourth segment broader than long. First segment broadly yellow at the base, the apex shining black; second yellow along the sides, but the apex black; third and fourth segments black with longitudinal yellowish stripes which extend lateral at the bases of the segments, thence posteriorly again for nearly one third the length of the segment; fifth segment with four longitudinal vittae; there is also a faint indication of a median line on the fourth and fifth segments. Genitalia dark, the styles yellowish.

Holotype, male, Cois Parma Cos, Brazil (P. W. Col.), 5-33 in the American Museum of Natural History; paratype, male, Rio Corcovada, H. S. Lopes, 5-23, in the collection of T. Borgmeier, Rio de Janeiro.

Melanostoma lanei n. sp.

Figs. 4, 5

Disc of thorax dully punctulate;-abdomen narrowed toward the base, with three pairs of oval spots; face with low tubercle, similar to **scitulum** Will. Length 6 to 7 mm.

Male.—Face, front, and cheeks black, covered with white pollen which is slightly brownish along the sides of the shining median bare stripe of the face; this stripe reaches from the oral edge to just above the flat tubercle and then forks so that there is a median dash of pollen extending from the antennae almost to the tubercle; a large shining spot above the antennae; pile of head all pale except a few black hairs on the vertical triangle and on the antennae. Antennae yellow, third segment brown above; arista yellow, the tips black; first and second segments sub-equal, together about the length of the third.

Thorax punctulate, dull grey except on the sides which are more aeneous, in the middle with a slender brown vitta and on each side a wider brownish vitta. Scutellum punctulate, shining aeneous, apex with two slender setulose hairs. Pleura shining aeneous, the posterior margin of the mesopleura somewhat reddish; pollen whitish and sparse. Pile of thorax all pale.

Legs yellow, the hind tibiae and all but the basal fourth of the hind femora, black; tarsi infuscated; pile pale, no peculiar hairs present. Wings hyaline; squamae yellow; halteres yellow, the knobs orange to reddish.

Abdomen slender, narrowed toward the base, semishining black with three pairs of elongate, slightly oblique, yellow spots, those on the second segment reaching the sides; genitalia yellowish to reddish. Venter yellowish, pile short and pale.

Female—very similar, front more brownish pollinose and there is a definite dark brown transverse band just in front of the median ocellus. There are indications of small yellow spots on the fifth segment.

Holotype: Male, S. Paulo, Brazil, Jan. 1930 (J. Lane) in the American Museum of Natural History; allotype female, same data, in the author's collection; paratype male, same data in the collection of the institute Sao Paulo, Brazil.

This species appears to be quite distinct and should be readily recognized by the peculiar dull colors of the thorax, the forked facial stripe, etc.

Xanthandrus Verrall

This genus, erected by Verrall to receive **M. comptus** Harris is recognized principally by the extensively orange colored abdomen, receding face, small but prominent tubercle, face and thorax without any yellow or reddish markings, bare metasternum, and edges of abdomen curved under. There are four species from the Neotropical region including one new form from the West Indies. The following key was prepared by Dr. C. H. Curran and I wish to thank him for the privilege of publishing it.

Table of Species

1. Face cinereous or whitish pollinose 2
   Face golden or golden brown pollinose, the orbits narrowly whitish ..... **cubana** n. sp.
2. Second abdominal segment opaque on not more than

the apical third on either side in the female, the second segment normally with reddish spots in female ..... 3.

Second abdominal segment opaque on more than the apical half across its entire width (except the lateral margins) and never with reddish areas; male unknown ..... **mexicanus** Curran.

3. Second abdominal segment of male with pair of large, subquadrate reddish spots .... **flavomaculatus** Shannon.

Second abdominal segment of male wholly black ..... **bucephalus** Wiedemann.

Xanthandrus cubana n. sp.
Figs. 6, 7

Differs from **X. bucephalus** Wd. and other neotropical species by the golden pollinose face, more extensively reddish abdomen, and brownish wings. Length 9 to 11 mm.

Male:—Face black, and covered with golden pile and pollen except the rounded shining tubercle, and the narrow upper oral edge, the narrow orbits more whitish; cheeks thinly covered with cinereous pollen, a semi-shining area between eyes and the oral opening. Front with a large shining brassy aeneous spot, the orbits broadly golden pollinose, becoming whitish next to the eyes; pile black; outer edges of antennal pits orange to yellow. Vertical triangle shining aeneous, pile black. Antennae black, third segment reddish below at the base; arista yellowish brown. There is a decided excavation on the upper and outer edge of the third segment of the antennae, mid way between the arista and apex.

Thorax and scutellum shining metallic aeneous, brassy in some lights, the pile all golden to yellowish except a few black hairs mixed in to form an inconspicuous transverse band just at the bases of the wings; pleura brownish to golden pollinose, the pile yellowish.

Legs simple, black; narrow tips of the femora, apices and basal half of the four front tibiae, and middle basitarsus reddish to yellowish. Longer hairs of the legs mostly pale; short appressed pile practically all black. Wings decidedly brownish, the basal half paler. Squamae light brownish, the fringes long and yellow to light brown, halteres light brown, the knobs lighter.

Abdomen reddish, the sides narrowly shining

aeneous. First tergite shining aeneous, the sides lightly pollinose; second with a pair of large reddish spots which are widely separated by an opaque black area, apex of tergite opaque black; third more extensively reddish, in most specimens the black is limited to an apical band which is wider in the middle (almost cuts the red area into two spots in one specimen); fourth tergite similar, the apical black margin not so wide and more shining; fifth shining aeneous; genitalia black. Venter reddish, pile black on fourth sternite, elsewhere pale.

Types.—Holotype, male, Loma del Gato, Sierra del Cobra (Elev. 2600-3325 ft.), Oriente, Cuba. Sept. 24-30, 1935. (J. Acuna, S. C. Bruner, L. C. Scaramuzza, Coll,) E. E. A. Cuba, Ento. No. 10562. Paratypes; male, same data as type; male, Sierra Maestra (Palma Mocha, 1386 meters), Cuba, July 10-20, 1922, (C. H. Ballon and S. C. Bruner); male, Las Mesas, Porto Rico, Dec. 22, 1929 (A. G. Harley). Holotype in the American Museum of Natural History.

Strangely enough the first two specimens were received from S. C. Bruner and sent to Dr. Curran for his verifications, but he returned them to the writer with the addition of the last two mentioned along with the description already in manuscript form. I have drawn freely from his description.

He states in addition that this species closely resembles **Syrphus radiatus** Bigot, and while Bigot's description is far from complete the two names may be found to apply to the same species. The species described by Bigot appears to have a differently marked abdomen.

Explanation of Plate

Drawings were drawn with the aid of the camera lucida but were not made to the same scale.

Fig. 1—**Baccha summa** n. sp., abdomen of male.

Fig. 2—**Baccha arx** n. sp., abdomen of male.

Fig. 3—**Baccha arx** n. sp., wing.

Fig. 4—**Melanostoma lanei** n. sp., abdomen of male.

Fig. 5—**Melanostoma lanei** n. sp., profile of head of male.

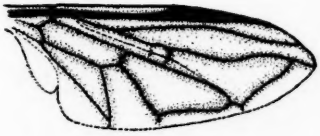
Fig. 6—**Xanthandrus cubana** n. sp., abdomen of male.

Fig. 7—**Xanthandrus cubana** n. sp., profile of head of male.

1. B. summa

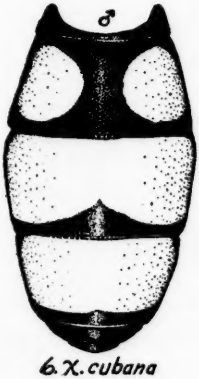
2. B. arx

4. M. lanei



3. B. arx

5. M. lanei



6. X. cubana

7. X. cubana

THE GENUS DICYPHONIA BALL (HOMOPTERA-CICADELLIDAE)

R. H. BEAMER, Lawrence, Kansas*

The genus Dicyphonia was described by Doctor E. D. Ball in the Report of the Iowa Academy of Science for 1899. **Dicyphonia ramentosa** Ball was described as new and designated as the genotype. Later it was discovered that this species was a synonym of **ornatus** Baker, which was described as a Platymetopius. **Ornatus** Baker thus becomes the type of the genus. In 1932 J. Gilbert Shaw described **Parabolocratus conus** which undoubtedly belongs to Dicyphonia, making the second species in the genus. This past summer (1935) three new Dicyphonias were collected, bringing the total number of species to five.

This small group of leafhoppers is of particular interest because of the striking sexual dimorphism and in one species two very different male forms are found. The shape of the vertex together with wing length can be used almost exclusively to separate the forms. Types of new species are in the Snow Entomological Collection.

Key to the Species.

1 Males 5
Females 2
2 Disc of vertex almost flat, at least on outer fourth 3
Disc of vertex distinctly convex almost to tip 4
3 Vertex distinctly longer than wide ..... **ornata** Baker
Vertex as wide as or wider than long ..... **plana** n. sp.
4 Vertex very highly convex, apex sharp, sides almost straight ..... **conica** Shaw
Vertex slightly convex, apex much broader, sides distinctly curved on outer fourth ..... **plura** n. sp.
5 Elytra as long as or longer than body 6
Elytra shorter than abdomen 7
6 Vertex distinctly longer than wide 8
Vertex about as wide as long ..... **plana** n. sp.
7 Vertex definitely longer than wide ..... **plura** n. sp.
Vertex about as wide or wider than long .. **minuta** n. sp.

*Contribution from Department of Entomology, University of Kansas

8 Veins of elytra so deeply margined with fuscous as to make whole insect appear almost black .... **ornata** (Baker)

Veins lightly margined with fuscous, if at all; venation usually quite clear ..... **plura** n. sp.

Dicyphonia ornata (Baker)

Platymetopius ornatus Baker, C. F. Can. Ent., vol. 32, p. 49, 1900.

Dicyphonia ramentosa Ball, E. D., Rept. Ia. Acad. Sci., for 1899, p. 69 (Probably appeared in 1900 or 1901).

The following is the original description:

"Length, ♂, 5.25 mm., of which the head occupies 1 mm.; width across base of elytra a little more than 1 mm. Vertex rather strongly obtusely angulate; width between eyes three-fourths the length at middle, which is more than twice length at eyes; the disc is evenly, slightly convex. Face, viewed from the side, straight. Pronotal width two and a half times the length; the length little more than three-eighths that of vertex. Pronotum about as broad as head, the anterior margin an even curve.

Colour pale yellowish; below brighter and unicolor ous, except a few dark arcs on summit of ront. Vertex with a double dark spot at tip and three abbreviated dark transverse bands crossing the median line at equal intervals back of it. Pronotum with two abbreviated transverse lines anteriorly, and several irregular dark markings laterally. Scutel with the transverse impressed line black and having each end connected with the base by a black band. Elytra smoky, back of the transverse veins with many small white spots, and three larger ones on the costa in the vicinity of the recurved costal nervures; membrane clear smoky. Valve not exserted, plates small, broad at base, suddenly narrowed beyond middle into slender acute points.

Described from one male in the National Museum; taken at Horace, Kansas, July 28, 1891."

The writer adds the following:

Genitalia: Oedagus in lateral view about three times as long as wide, abruptly narrowed on outer third to one-fifth median width, ending in divided tip, each part consisting of a forward and a backward projecting process.

Specimens have been examined from the following

localities; Decatur, Phillips and Norton Counties, Kansas; Prescott, Granite Dell and Chiricahua Mts., Arizona; Las Animas and Fort Collins, Colorado; Salt Lake City, Utah.

Dicyphonia plura n. sp.

Resembling **D. ornata** (Baker) but larger, ♀ with disc of vertex convex instead of flat, ♀ with veins scarcely margined with fuscous, hence venation quite distinct. Length ♀ 5.5 to 7 mm.; ♂ 4 to 4.5 mm.

Female: Vertex definitely longer than wide; disc convex to tip; sides almost straight to outer fourth, there curved to form broad tip. Elytra much shorter than abdomen, venation distinct, no apical cells present. Ovipositor long. Color usually light green, often stramineous. Small spots either side apex of vertex, black usually present, better colored specimens with markings as in illustration. Veins darker. Dorsum of abdomen more or less longitudinally vittate with fuscous.

Short-winged male: Like female in shape of vertex, wing venation and color, somewhat larger than long-winged males.

Long-winged male: Disc of vertex more nearly flat, sharper pointed than female, tip not so rounding, colored as in illustration. Pronotum mottled with fuscous, more or less arranged in four longitudinal rows of spots: median pair projected across scutellum. Elytra longer than abdomen. Veins dark to crossveins which are white, margined with fuscous; apices, including outer two thirds of apical cells, dark brown. Bases of apicals and apices of anteapicals white, showing as a more or less definite white cross band. Face and sternum light, venter of abdomen more or less infuscated.

Male Genitalia: Resembling **D. ornata** but oedagus longer and not narrowed so abruptly on the outer third. In dorsal view shaft more definitely enlarged just before processes.

Holotype, female; allotype male (short winged); allo-morphotype male (long winged) and numerous paratypes of all three forms, Cochise, Arizona, August, 24, 1935, R. H. Beamer.

One hundred forty-four females, one hundred ten long winged males and twenty-four short winged males were studied. All of these were taken from a bit of grass

land, probably less than ten acres in extent, located about two miles east of Cochise, Arizona, on the shore of a usually dry lake.

Dicyphonia conica (Shaw)

Parabolocratus conus Shaw, J. Gilbert, Jour. Kansas Ent. Soc., vol. 5, p. 45, 1932.

This species described from one female is undoubtedly a Dicyphonia. Only the type female, from Torrence Co., New Mexico is at hand.

A beautiful pale green species closely related to **D. plura** but readily separated from it by the very high convex disc of the vertex and the much sharper apex.

Dicyphonia plana n. sp.

Resembling **D. ornata** (Baker) but smaller, vertex as wide as long and male internal genitalia very different. Length, ♀ 6 mm.; ♂ 3.5 mm.

Vertex almost flat, as wide as long, quite broad throughout, in lateral view even concave, lateral margins curved to apex, more rapidly on outer half. Female with wings scarcely half as long as abdomen, in males reaching beyond. Venation ramose but fairly distinct, dark in both sexes, much darker in the male. Vertex marked as in illustration. Pronotum mottled with fuscous spots arranged more or less in longitudinal rows. Dorsum of abdomen of female more or less marked with longitudinal fuscous vittae, three median and a pair of irregular ones on each side. Face with black band as wide as eyes, paralleling margin of vertex. Venter of abdomen dark. Elytra of male very dark from tip of clavus to apex, broken by three large white spots on costa and one on mesal margin near apex of clavus.

Female last ventral segment twice as long as preceding, posterior margin straight to sharp median tooth.

Male valve triangular, semiacute at apex, almost hidden by last abdominal segment. Plates at base much narrower than valve, outer margin almost straight for fifth their length, then narrowing to long slender tips. Pygofer with large lateral tooth near middle of ventral margin. Oedagus in lateral view rapidly curved on basal fourth, almost at right angles to base, about one-fifth as wide at base as length, slightly and evenly tapered to bifid tip, each side divided into a very large leaf-

like outward and upward projecting process and a very tiny basal one.

Holotype, male; allotype female; 4 male and 1 female paratypes, Cochise, Arizona, August 24, 1935, R. H. Beamer. Taken from the same habitat and at the same time as **D. plura.**

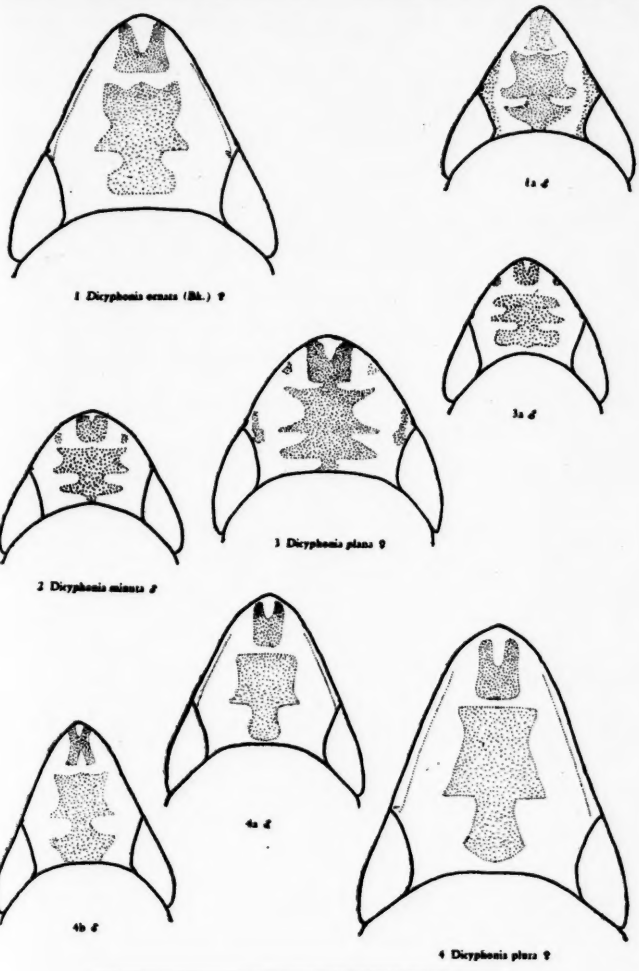
Dicyphonia minuta n. sp.

Resembling **D. plana** n. sp. but vertex broader and shorter and elytra of male shorter than abdomen. Length 3.25 mm.

Vertex broader than long, margins evenly curved from eye to apex, disc slightly convex on posterior half. Elytra not reaching tip of abdomen, venation distinct, veins dark brown; costal margin with three large white spots on outer half, another at apex of clavus, remainder of elytra from crossveins to tip brown. Face margined with black stripe as wide as eyes, sternum and venter of abdomen dark, legs light except dark banded tarsi.

Male valve almost hidden, triangular, tip truncate. Plates as wide at base as valve, outer margin roundingly curved on basal fourth, converging gradually to long rather broadly rounding apices, distinctly wider than in **D. plana.** Oedagus as in **D. plana** but shorter and stouter, basal angle not so great and apical paired processes larger. Pygofer with median tooth of ventral margin smaller.

Holotype, male, and 16 male paratypes, Laramie, Wyoming, June 23, 1935, R. H. Beamer.



KANSAS ENTOMOLOGICAL SOCIETY

Twelfth Annual Meeting

Kansas State Teachers College, Emporia, Kansas.

Science Hall — April 4, 1936 — Room 104

Business meeting ..... 10:00—11:00 a. m.

Presentation of papers ..... 11:00 a. m.

1. Dissection technique for studying male genitalia of leafhoppers.
Melvin E. Griffith, Univ. Kans.
2. Notes on the classification of three genera of Delphacidae (Homoptera).
Lawrence Penner, Univ. Kans.
3. Some observations on the Coleoptera of the prairie. Don B. Whelan, Univ. Nebr.
4. Recent additions of Curculionidae (Coleoptera) to the Snow entomological collection. Lyman Henderson, Univ. Kans.
5. Beetles have eight legs.
Milton Sanderson, Univ. Kans.

Presentation of papers ..... 1:30 p. m.

6. Life history of the spotted-sided cutworm, **Agrostis badinodis** Grote (Lepidoptera, Noctuidae). H. H. Walkden, U. S. Bur. Ent. & Plant Quarantine.
7. The head musculature of the Carolina mantis, **Stagomantis carolina** L. (Orthoptera, Mantidae) (Lantern). Philip Levereault, Univ. Kans.
8. Notes on flour mill insects.
N. E. Good, U. S. Bur. Ent. & Plant Quarantine.
9. A curious new Anisops (Hemiptera, Notonectidea) from Timor Island.
H. B. Hungerford, Univ. Kans.
10. Hessian fly eggs and freezing temperatures.
W. T. Emery, U. S. Bur. Ent. & Plant Quarantine.
11. Negative prints as an aid to the study of microscopic structure. R. H. Beamer, Univ. Kansas.
12. Cankerworms and population trends.
E. J. McNay and R. L. Parker, K. S. C.
13. Butterflies of Kansas. William Field, Univ. Kans.
14. Preliminary report on the mosquitos of Kansas.
Miss Noblesse De Moss, K. S. C.
15. We have roaches.
Thompson Lawrence, Univ. Kans.
16. Soil insecticides as a control for subterranean insects. Harry R. Bryson, K. S. C.
17. The shoe-box rearing method as a stimulus to winter insect collecting. D. A. Wilbur, K. S. C.
18. Mound builders. Theo. H. Scheffer.
U. S. Bur. Biol. Survey, Puyallup, Wash.
19. "Studies on the specificity of insect tissue",
by Henry Thomas, Univ. Kans.

Final business meeting and election of officers.
Kathleen Doering, Pres.; R. L. Parker, Secy.-Treas.

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